

Applicant: E. de Juan, Jr., et al.
U.S.S.N.: 09/523,767
RESPONSE TO FINAL OFFICE ACTION
Page 3 of 25

Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (AMENDED) A method for providing access within an eye during an ocular surgical procedure, comprising the steps of:

providing an entry alignment device that is configured so as to provide an entry aperture in each of the conjunctiva and sclera of the eye and maintaining the entry aperture in each of the conjunctiva and sclera aligned during the surgical procedure; and

inserting the entry alignment device into the eye so as to form the entry apertures, where said inserting is accomplished without pulling back the conjunctiva an incision in the conjunctiva or the sclera.

2. (ORIGINAL) The method according to claim 1, wherein the entry alignment device being provided is sized such that when the entry alignment device is removed from the eye, the entry aperture formed in the conjunctiva and sclera are sealed without the use of sutures.

3. (ORIGINAL) The method according to claim 2, wherein the entry alignment device being provided is sized such that when the entry alignment device is removed from the eye, the entry aperture is self sealing.

4. (ORIGINAL) The method according to claim 2, further comprising the steps of:

providing a surgical instrument having an operable end for insertion through the entry aperture in each of the conjunctiva and sclera, a portion of the operable end having a cross-sectional diameter not greater than 25 gauge; and

inserting the surgical instrument through the entry apertures into the eye.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 4 of 25

5. (ORIGINAL) The method according to claim 4, wherein the surgical instrument is selected from the group consisting of a high-speed vitreous cutter, forceps, scissors, pick, light source, laser, fragmentation, diathermy, and aspirator.

6. (ORIGINAL) The method according to claim 2, wherein the entry alignment device is in the form of one of a metal cannula, a polyimide cannula, a wire spreader and a shoe-horn type member.

7. (ORIGINAL) The method according to claim 1, wherein there are a plurality of entry alignment devices being provided and wherein the step of inserting includes inserting each of the plurality of entry alignment devices so as to form a plurality of entry apertures in the conjunctiva and the sclera.

8. (ORIGINAL) The method according to claim 7, further comprising the steps of:
providing a surgical instrument having an operable end for insertion through the entry aperture in each of the conjunctiva and sclera, a portion of the operable end having a cross-sectional diameter not greater than 25 gauge; and
inserting the operable end portion of at least one surgical instrument through one of the plurality of entry apertures.

9. (ORIGINAL) The method according to claim 1, further comprising the steps of:
providing an infusion cannula having an operable end for insertion into the eye, the operable end having a cross-sectional diameter of not more than 25 gauge and being interconnected to an infusion source; and
inserting the cannula operable end through the conjunctiva and sclera.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 5 of 25

10. (ORIGINAL) The method according to claim 9, further comprising the step of sealing the apertures in the conjunctiva and sclera formed by the inserted infusion cannula without the use of sutures.

11. (ORIGINAL) The method according to claim 1, wherein the step of inserting includes inserting the entry alignment device into the eye so the entry apertures in the conjunctiva and sclera are at an angle with respect to a normal to the eye.

12. (ORIGINAL) The method according to claim 11, wherein the angle is greater than 45 degrees from the normal.

13. (PREVIOUSLY PRESENTED) The method of claim 55 wherein said step of implementing further includes

inserting a light source through the entry aperture formed by one of the plurality of entry alignment devices and inserting a high speed vitreous cutting/ aspirating instrument in the entry aperture formed by another of the plurality of entry alignment devices; and

removing vitreous gel using the high speed vitreous cutting/ aspirating instrument.

14. (PREVIOUSLY PRESENTED) The method of claim 13, further comprising the steps of:

inserting an operable portion of an infusion cannula through the conjunctiva and the sclera; and

maintaining the intraocular volume by infusing a fluid through the infusion cannula; infusing a first fluid through the infusion cannula while aspirating vitreous fluid; and exchanging the infused first fluid with a second fluid following the step of implementing.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 6 of 25

15. (ORIGINAL) The method according to claim 13, wherein the entry alignment device being provided is sized such that when the entry alignment device is removed from the eye, the entry aperture formed in the conjunctiva and sclera are sealed without the use of sutures.

16. (ORIGINAL) The method according to claim 15, wherein the entry alignment device being provided is sized such that when the entry alignment device is removed from the eye, the entry aperture is self sealing.

17. (PREVIOUSLY PRESENTED) The method according to claim 15, wherein the entry alignment device is in the form of one of a metal cannula, a polyimide cannula, a wire spreader and a shoe-horn type member.

18. (ORIGINAL) The method according to claim 13, further comprising the steps of:
providing an infusion cannula having an operable end for insertion into the eye, the operable end having a cross-sectional diameter of not more than 25 gauge and being interconnected to an infusion source; and
inserting the infusion cannula operable end through the conjunctiva and sclera.

19. (ORIGINAL) The method according to claim 18, further comprising the step of sealing the apertures in the conjunctiva and sclera formed by the inserted infusion cannula without the use of sutures.

20. (ORIGINAL) The method according to claim 13, wherein the step of inserting includes inserting the entry alignment device into the eye so the entry apertures in the conjunctiva and sclera are at an angle with respect to a normal to the eye.

21. (ORIGINAL) The method according to claim 20, wherein the angle is greater than 45 degrees from the normal.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 7 of 25

22. (PREVIOUSLY PRESENTED) The method of claim 14, further comprising the steps of:

infusing a first fluid through the infusion cannula while aspirating vitreous fluid; and
exchanging the infused first fluid with a second fluid following the step of implementing.

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Applicant: E. de Juan, Jr., et al.
U.S.S.N.: 09/523,767
RESPONSE TO FINAL OFFICE ACTION
Page 8 of 25

42. (WITHDRAWN) A method for providing access within an eye during an ocular surgical procedure, comprising the steps of:

providing an insertion tool having a penetrating member and an entry alignment device;
removably mounting the entry alignment device onto the insertion tool penetrating member;
and

inserting the penetrating member into the eye, so the penetrating member and a portion of the entry alignment device penetrate each of the conjunctiva and sclera of the eye, whereby said portion of the entry alignment device establishes an entry aperture in each of the conjunctiva and sclera of the eye and maintains the entry aperture in each of the conjunctiva and sclera aligned during the surgical procedure.

43. (WITHDRAWN) The method according to claim 42, further includes the steps of:

removing the penetrating member from the eye; and
maintaining the portion of the entry alignment device disposed in the eye.

44. (WITHDRAWN) The method according to claim 42, wherein the entry alignment device is configured so as to include a through aperture and wherein said method further includes the steps of:

removing the penetrating member from the eye; and
maintaining the portion of the entry alignment device disposed in the eye, whereby the entry alignment device through aperture forms a passage extending between an interior and an exterior of the eye.

45 (WITHDRAWN) The method according to claim 44, wherein the entry alignment device being provided is sized such that when said portion of the entry alignment device is removed from the eye, the entry aperture formed in the conjunctiva and sclera are sealed without the use of sutures.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 9 of 25

46. (WITHDRAWN) The method according to claim 45, wherein the entry alignment device being provided is sized such that when the entry alignment device is removed from the eye, the entry aperture is self sealing.

47. (WITHDRAWN) The method according to claim 44, further comprising the steps of: providing a surgical instrument having an operable end for insertion through the entry alignment device through aperture, a portion of the operable end having a cross-sectional diameter not greater than 25 gauge; and

inserting the surgical instrument through the entry alignment device through aperture into the eye.

48. (WITHDRAWN) The method according to claim 47, wherein the surgical instrument is selected from the group consisting of a high-speed vitreous cutter, forceps, scissors, pick, light source, laser, fragmentation, diathermy, and aspirator.

49. (WITHDRAWN) The method according to claim 44, wherein the entry alignment device is in the form of one of a metal cannula or a polyimide cannula.

50. (WITHDRAWN) The method according to claim 44, wherein said step of inserting includes inserting the penetrating member and said portion of the entry alignment device into the eye so the entry apertures in the conjunctiva and sclera are at an angle with respect to a normal to the eye.

51. (WITHDRAWN) The method of claim 44, wherein the insertion tool being provided includes a handle member, where the penetrating member extends from an end of the handle member.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 10 of 25

52. (WITHDRAWN) The method of claim 51, wherein the insertion tool further includes a mechanism for removably securing the entry alignment device to the insertion tool.

53. (WITHDRAWN) A method for treating a posterior segment of an eye comprising the steps of:

providing an insertion tool having a penetrating member and a plurality of entry alignment devices, each entry alignment device having a through aperture;

removably mounting one of the plurality of entry alignment devices onto the insertion tool penetrating member;

inserting the penetrating member into the eye, so the penetrating member and a portion of said one of the plurality of entry alignment devices penetrate each of the conjunctiva and sclera of the eye, whereby said entry alignment device portion establishes an entry aperture in each of the conjunctiva and sclera of the eye and maintains the entry aperture in each of the conjunctiva and sclera aligned during the surgical procedure;

removing the penetrating member from the eye, whereby the entry alignment device through aperture of said one of the plurality of entry alignment devices forms a passage extending between an interior and an exterior of the eye; and

repeating said steps of removably mounting, inserting and removing for each of the plurality of entry alignment devices; and

implementing a corrective procedure for the retina.

54. (WITHDRAWN) The method of claim 53, wherein said step of implementing a corrective procedure further includes:

inserting a light source through the entry alignment device through aperture of one of the plurality of entry alignment devices;

inserting a high speed vitreous cutting/ aspirating instrument through the entry alignment device through aperture of another of the plurality of entry alignment devices; and

removing vitreous gel using the high speed vitreous cutting/ aspirating instrument.

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 11 of 25

55. (AMENDED) A method for treating a posterior segment of an eye comprising the steps of:

providing a plurality of entry alignment devices, each entry alignment device being configured so as to provide an entry aperture in each of the conjunctiva and sclera of the eye and maintaining the entry aperture in each of the conjunctiva and sclera aligned during the surgical procedure;

inserting each of the plurality of entry alignment devices into the eye, where said inserting is accomplished without pulling back the conjunctiva; and an incision in the conjunctiva or the sclera; and

implementing a corrective procedure for the retina.

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63. (PREVIOUSLY PRESENTED) The method according to claim 9, wherein said inserting the infusion cannula further includes inserting the infusion cannula operable end one of directly through the conjunctiva and sclera or through the entry aperture in each of the conjunctiva and sclera formed by the entry alignment device.

64. (PREVIOUSLY PRESENTED) The method according to claim 14, wherein said inserting the infusion cannula further includes inserting the infusion cannula operable end one of

Applicant: E. de Juan, Jr., et al.

U.S.S.N.: 09/523,767

RESPONSE TO FINAL OFFICE ACTION

Page 12 of 25

directly through the conjunctiva and sclera or through the entry aperture in each of the conjunctiva and sclera formed by the entry alignment device.

65. (PREVIOUSLY PRESENTED) The method according to claim 18, wherein said inserting the infusion cannula further includes inserting the infusion cannula operable end one of directly through the conjunctiva and sclera or through the entry aperture in each of the conjunctiva and sclera formed by the entry alignment device.

66. (WITHDRAWN) The method of claim 26, wherein the cutting member driving mechanism is configured so as to drive the cutting member so as make at least 1500 cuts per minute past the insertion member aperture.